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BOOK REVIEWS.

EDITED BY W. H. BUSSEY, University of Minnesota.

Vocational Mathematics. By WILLIAM H. DOOLEY. D. C. Heath and Co., Boston, 1915. 358 pages. $1.00.

The author of this book is the principal of the Technical High School of Fall River, Mass. He states in the preface that, in his ten years of experience in organizing and conducting intermediate and secondary technical schools, he has noticed the inability of the regular teachers in mathematics to give the pupils the training in commercial and rule of thumb methods of solving mathematical problems that are so necessary in everyday life. He says that the pupils graduate from the course in mathematics without being able to "commercialize" or apply their mathematical knowledge in such a way as to meet the needs of trade and industry. It was to overcome this difficulty that he wrote this book. It is in the following ten parts, whose names sufficiently indicate the scope of the work: Review of arithmetic; carpentering and building; sheet metal work; bolts, screws and rivets; shafts, pulleys and gears; plumbing and hydraulics; steam engineering; electrical work; mathematics for machinists; textile calculations. There is an appendix of about 40 pages devoted to the metric system, graphs, formulas, logarithms, trigonometry, and tables of various kinds.

W. H. BUSSEY.

A Review of Algebra. By ROMEYN HENRY RIVENBURG. American Book Co., New York, 1914. 80 pages.

This is a book of problems prepared by the head of the department of mathematics of the Peddie Institute, Hightstown, N. J. It begins with a seven-page outline of elementary and intermediate algebra which contains important definitions, special rules for multiplication and division, cases in factoring, etc. It is designed for senior high-school students who need a thorough reivew of algebra in order to prepare for college entrance examinations and for effective work in the freshman year in college. The whole scheme of the book is ordinarily to have a page of problems represent a day's work. It includes quadratics, simultaneous quadratics, the progressions and the binomial theorem. There are twenty-three pages of actual college entrance examinations at the end of the book. The author states in the preface that the student is expected to use his regular text book in algebra for reference, as he would use a dictionary,—to recall a definition, a rule, or a process that he has forgotten.

W. H. BUSSEY.

An Introduction to Laboratory Physics. By LUCIUS TUTTLE. Jefferson Laboratory of Physics, Philadelphia, 1915. 150 pages.

This book is essentially a revision of the mimeographed direction sheets that have been used in the first part of the laboratory course given by the author at

Jefferson Medical College. It does not cover the ground of the usual laboratory manual of physics, but is intended to precede the use of any one of them in a course of physical measurements. It contains chapters on weights and measures, angles and circular functions, accuracy and significant figures, logarithms, small magnitudes, the slide rule, graphic representation, graphic analysis, the principle of coincidence, measurements and errors, statistical methods, deviation and dispersion, the weighting of observations, criteria of rejection, and least squares and various errors.

W. H. Bussey.

University of Minnesota.

Resistance of Materials. For beginners in Engineering. By S. E. Slocum, Professor of Applied Mathematics in the University of Cincinnati. Ginn & Company, Boston, 1914. $2.00.

The chief feature which distinguishes this volume from other American text-books on the same subject, as stated by the author in his preface, is that the principle of moments is used consistently throughout in place of the usual calculus processes.

The subject matter is presented in a clear and concise manner and is written so the book may be used by students at the same time they are taking courses in calculus or even before taking such courses. This feature makes the book available for trade or architectural schools where no calculus is taught.

The text has been divided into the following fourteen sections: stress and deformation; first and second moments; bending moment and shear diagrams; strength of beams; deflection of cantilever and simple beams; continuous beams; restrained or built-in beams; columns and struts; torsion; spheres and cylinders under uniform pressure; flat plates; riveted joints and connections; reinforced concrete; simple structures.

The author has used the principle of integration freely throughout the text dealing with the small parts, "elements," represented by Δ and using the symbol Σ instead of $\int$. Such a ratio as $\Delta M/\Delta x$ has been defined as the "rate of change," instead of the usual dM/dx of the calculus; also in finding the area of the moment diagram the expression $\Sigma M \cdot \Delta x$ replaces the $\int M dx$ of the calculus.

Instead of deducing the equation of the elastic curve of a loaded beam and from it the slope and deflection at any section, the author has used for the deflection, $d = 1/EI$ (static moment of the moment diagram), and for the slope, $\tan \varphi = A/EI$, where A represents the area of the moment diagram between any two points in question. These equations give simple solutions in most cases. In dealing with the continuous beam and the restrained or built-in beam, the necessary formulas have been deduced by considering the effect of the loads acting separately. The sections dealing with torsion, spheres and cylinders under uniform pressure, and flat plates, contain the usual formulas for these cases.

The feature of the book that appealed most strongly to the reviewer was the